Amendment to Claims

CLAIMS

What is claimed is:

1. (Currently amended) A video camera with an imaging system and a sequential diversity processor for enhanced image clarification comprising:

~~means~~ an imaging system for producing a sequence of digital images of an object, ~~which object is~~ said object being continuously distorted by ~~time-varying aberrations of an~~ a changing optical medium;

an adaptive optic device located within said imaging system, controlled by said sequential diversity processor and arranged for ~~receiving said sequence of digital images and~~ canceling ~~said~~ aberrations introduced by said medium, aberrations such as those caused by a turbulent atmosphere or unwanted changes in said imaging system, to thereby provide solely adapted in-focus images of said object ;

~~a digital processor connecting with said adaptive optic device for performing real-time control of said adaptive optic device; and~~

a detector array within said imaging system arranged for receiving said solely adapted in-focus images and producing digital image representations thereof ; and

a sequential diversity processor connecting with said ~~digital processor for providing real-time~~ detector array and said adaptive optic device, said sequential diversity processor receiving said digital image representations from said detector array and providing sequential control signals to said adaptive optic device to ~~thereby~~ enable said adaptive optic device to cancel said aberrations.

2. (Currently amended) The camera of claim 1 wherein said sequential diversity processor utilizes diversity ~~D(k)~~ D(k-1), the diversity at time k-1 , along with current and previous ~~data~~ digital images, I(k) and I(k-1), as diverse images to ~~estimate Q(k) a residual phase aberration in said optical system whereby D(k+1) = -Q(k).~~ produce Q(k-1), an estimate of the residual aberrations in said solely adapted in-focus image of said object at time k-1, and wherein said sequential diversity processor sets diversity D(k) to the negative of that estimate, that is, D(k) = -Q(k-1).

3. (Currently amended) The camera of claim 2 wherein ~~T(k)~~ T(k-1) , the signal produced by the sequential diversity processor to control the adaptive optic device at time k-1, is added to ~~D(k+1) whereby T(k+1) = T(k) + D(k+1).~~ D(k), to produce the control signal at time k, that is, T(k) = T(k-1) + D(k), which also implies that D(k) = T(k) – T(k-1).

4. (Currently amended) The sequential diversity ~~imaging apparatus comprising: means for receiving a sequence of images of an object, said object being continuously distorted by a changing optical medium; an AO device in optical proximity with said receiving means for canceling aberrations introduced by said medium to thereby provide~~ processor of Claims 1, 2 and 3 whereby the processor uses only the sequential, digital, solely adapted in-focus images of said object ~~; a detector array arranged for receiving said solely adapted in-focus images and producing digital image representations thereof; and a sequential diversity processor connecting with said detector array and said AO device, said sequential diversity processor receiving said digital image representations from said detector array and providing~~ as the input diverse images and the changes in the adaptive optic device as the diversities to calculate sequential control signals to said ~~AO~~ adaptive optic device to enable said ~~AO~~ adaptive optic device to cancel said aberrations . The sequential diversity processor uses no additional inputs and the invention requires no auxiliary equipment or signal, like an intentionally defocused image, to remove aberrations in said optical medium.

Claims 5-9 (Cancelled)